



Great Basin Unified Air Pollution Control District

LIST OF CONSERVATION MANAGEMENT PRACTICES FOR AGRICULTURAL OPERATIONS

**Including Best Available Control Measures (BACM) and
Best Available Retrofit Control Technology (BARCT)
for Agricultural Practices**

<http://www.gbuapcd.org/farm/index.htm>

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GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT BACM/BARCT LIST OF CONSERVATION MANAGEMENT PRACTICES FOR AGRICULTURAL OPERATIONS

The Conservation Management Practices (CMP) categories for both Alfalfa (CMP 1) and Row/Filed Crops (CMP 2) are:

- A. Land Preparation / Cultivation
- B. Harvesting
- C. Other
- D. Unpaved Roads greater than or equal to 75 vehicle trips / day (complete this category if your farm roads has 75 or greater vehicle trips per day)
- E. Unpaved Roads less than 75 vehicle trips / day (complete this category if your farm roads has less than 75 vehicle trips per day)
- F. Unpaved Vehicle / Equipment Areas (vehicle / equipment parking lots, staging areas, etc.) greater than or equal to 50 vehicle trips / year (complete this category if your farm's unpaved vehicle / equipment area has 50 or greater vehicle trips per year)
- G. Unpaved Vehicle / Equipment Areas less Than 50 vehicle trips /year (complete this category if your farm's unpaved vehicle / equipment area has less than 50 vehicle trips per year)

If a dairy, confined animal feeding operation (CAFO) or other crop or agricultural practice comes into the three counties that comprise the Great Basin Unified Air Pollution Control District, a CMP list will be developed for that type of operation. Please contact the District at (760) 872-8211 if you have any questions.

CMP 1. ALFALFA FARMING

Category CMP 1-A; LAND PREPARATION / CULTIVATION

Cessation of Activities During High Winds:	No disking, tilling or other land preparation activities shall take place when active wind erosion is observed on a field and visible particulate matter leaves the property from which it originates.
Chemigation/Fertigation:	Application of chemicals through an irrigation system reduces the need to travel in-field for application purposes.
Combined Operations:	Combine equipment to perform several operations during one pass, thereby reducing the number of passes necessary to cultivate the land.
Conservation Irrigation:	Conserving water through drip, sprinkler, underground lines, conserves water and reduces weed population and need for tillage.
Equipment Changes/Technological Improvements:	Use larger equipment, modify land planing and land leveling, matching the equipment to row spacing to reduce the number of passes.
Multiple CMPs in another category:	
Night Farming:	Operate at night when moisture levels are higher and winds tend to be lighter, thereby reducing dust emissions.
Non-Tillage / Chemical Tillage:	Use flail mower, low volume sprayers, or heat delivery systems (as harvest pre-conditioner). Reduces or eliminates number of soil tillage passes.
Soil Moisture Management:	Ensure adequate soil moisture levels at the time of tillage or soil maintenance to reduce dust emissions.
Other (special approval required):	Contact District at (760) 872-8211 for approval.

CMP 1 ALFALFA FARMING

Category **CMP 1-B; HARVEST**

Combined Operations:	Combine equipment to perform several operations during one pass, thereby reducing the number of passes necessary to cultivate the land.
Equipment Changes/Technological Improvements:	Use larger equipment, modify land planing and land leveling, matching the equipment to row spacing to reduce the number of passes.
Green Chop:	Harvest a forage crop without allowing it to dry in the field; reduces multiple equipment passes.
Large Bales:	Use balers to harvest crop, reducing PM10 emissions from crops traditionally harvested by chopping, truck passes, and residue burning.
Multiple CMPs in another category:	
Night Harvesting:	Implement cultural practices at night or when the humidity is high.
Shuttle System:	Haul multiple or larger trailers/bins per trip thereby reducing the number of trips.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 1 ALFALFA FARMING

CATEGORY CMP 1-C; OTHER

Conservation tillage (e.g.: no tillage, minimum tillage)	Types of tillage that reduce loss of soil and water in comparison to conventional tillage. Reduces the number of passes, soil disturbance. It improves soil because it retains plant residue and increases organic matter. Converting to no or low till operations, implement reduced till activities, adding soil/ water amendments to improve resource and reduce tillage needs.
Cover Crop:	Use seeding or natural vegetation/regrowth of plants to cover soil surface and reduce wind erosion of soil.
Fallowing Land:	Temporary or permanent removal from production eliminates entire operation/passes or reduces soil disturbing activities.
Multiple CMPs in another category:	
Organic Practices:	Use biological control methods or non-chemical control methods. Reduces chemical use and number of application passes.
Surface Roughening:	In wind-prone areas, conduct surface roughening by bedding, rough disking, or tillage that leaves the surface covered with stable clods.
Time of Disturbance/Planting:	Time planting to coincide with the time of year when PM concentrations are less.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 1 ALFALFA FARMING

CATEGORY **CMP 1-D; UNPAVED ROADS (GREATER THAN OR EQUAL TO 75 VEHICLE TRIPS / DAY)**

Dust Suppressant:	Apply an approved dust suppressant at a sufficient quantity and frequency to prevent windblown dust.
Paving:	Pave unpaved roads. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Road Oil:	Apply road oil to the unpaved road surface area.
Washed Gravel:	Apply washed gravel to the unpaved road surface area.
Water:	Apply water at a sufficient quantity and frequency to maintain moist surface under windy conditions.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 1 ALFALFA FARMING

CATEGORY **CMP 1-E; UNPAVED ROADS (LESS THAN 75 VEHICLE TRIPS / DAY)**

Access Restriction:	Restrict public access to unpaved roads using signage or physical access restrictions (e.g., access barrier) and/or limit total trips to less than 10 per day.
Chips / Mulches:	Apply wood chips or mulch to the unpaved road surface area.
Dust Suppressant:	Apply an approved dust suppressant at a sufficient quantity and frequency to prevent windblown dust.
Less than 10 vehicle trips on any day:	
Organic Materials:	Apply organic materials to the unpaved road surface area.
Paving:	Pave unpaved roads. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Polymers:	Apply polymers to the unpaved road surface area.
Road Oil:	Apply road oil to the unpaved road surface area.
Speed Limits:	Control speed limits to 15 mph on unpaved roads through worker behavior modification, signage, or any other necessary means.
Track-Out Control:	Minimize dirt material tracked out onto public roadways by paving or chemically stabilizing, or applying gravel to the unpaved road surface for a distance of at least 100 feet from the public roadway. Check or clean the underside of all haul trucks before leaving the parking or staging area.
Water:	Apply water to the unpaved road surface area.
Washed Gravel:	Apply washed gravel to the unpaved road surface area.
Wind Barrier:	Plant trees or establish other barriers on the typically upwind side of the traffic area to minimize windblown dust from the unpaved surface.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 1 ALFALFA FARMING

CATEGORY CMP 1-F; VEHICLE / EQUIPMENT AREAS

(IF AVERAGE DAILY VEHICLE TRIPS / YR ARE GREATER THAN OR EQUAL TO 50 ON UNPAVED EQUIPMENT YARDS, OR

IF AVERAGE DAILY TRIPS BY 3 (OR MORE) AXLED VEHICLES / YR ARE GREATER THAN OR EQUAL TO 25)

Dust Suppressant:	Apply an approved dust suppressant at a sufficient quantity and frequency to prevent windblown dust.
Paving:	Pave unpaved vehicle / equipment areas. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Road Oil:	Apply road oil to the unpaved vehicle/equipment area surface.
Vegetative material:	Apply vegetative material to the unpaved vehicle/equipment area surface.
Washed Gravel:	Apply washed gravel to the unpaved vehicle/equipment area surface.
Water:	Apply water to the unpaved vehicle/equipment area surface.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 1 ALFALFA FARMING

CATEGORY CMP 1-G; VEHICLE / EQUIPMENT AREAS

(IF AVERAGE DAILY VEHICLE TRIPS / YR ARE LESS THAN 50 ON UNPAVED EQUIPMENT YARDS, or

IF AVERAGE DAILY TRIPS BY 3 (OR MORE) AXLED VEHICLES / YR ARE LESS THAN 25)

Chips / Mulches:	Apply wood chips or mulches to the unpaved vehicle/equipment area surface.
Less than 10 vehicle trips on any day:	
Organic materials:	Apply organic material to the unpaved vehicle/equipment area surface.
Polymers:	Apply polymers to the unpaved road surface area.
Restricted Access:	Restrict public access to unpaved vehicle/equipment area surface using signage or physical access restrictions (e.g., access barrier) and/or limit total trips to less than 10 per day.
Road Oil:	Apply road oil to the unpaved vehicle/equipment area surface.
Speed Limits:	Control speed limits to 15 mph on unpaved vehicle / equipment area through worker behavior modification, signage, or any other necessary means.
Paving:	Pave unpaved vehicle / equipment areas. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Water:	Apply water to the unpaved vehicle/equipment area surface.
Washed Gravel:	Apply washed gravel to the unpaved vehicle/equipment area surface.
Wind Barrier:	Plant trees or establish other barriers on the typically upwind side of the traffic area to minimize windblown dust from the unpaved surface.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 2 FIELD AND ROW CROPS

Category CMP 2-A; LAND PREPARATION / CULTIVATION

Bed/Row Size or Spacing:	Spacing adjustments reduce the number of passes and soil disturbances by increasing plant density/canopy through reduction of row width.
Cessation of Activities:	No disking, tilling or other land preparation activities shall take place when active wind erosion is observed on a field and visible particulate matter leaves the property from which it originates.
Chemigation/Fertigation:	Application of chemicals through an irrigation system reduces the need to travel in-field for application purposes.
Combined Operations:	Combine equipment to perform several operations during one pass, thereby reducing the number of passes necessary to cultivate the land.
Conservation Irrigation:	Conserving water through drip, sprinkler, underground lines, conserves water and reduces weed population and need for tillage.
Conservation tillage (e.g.: no tillage, minimum tillage)	Types of tillage that reduce loss of soil and water in comparison to conventional tillage. Reduces the number of passes, soil disturbance. It improves soil because it retains plant residue and increases organic matter. Converting to no or low till operations, implement reduced till activities, adding soil/ water amendments to improve resource and reduce tillage needs.
Cross Wind Stripcropping:	Establish crops in strips across the prevailing wind direction and arranged so that strips susceptible to wind erosion are alternated with strips resistant to wind erosion.
Equipment Changes/Technological Improvements:	Use larger equipment, modify land planing and land leveling, matching the equipment to row spacing to reduce the number of passes.
Multiple CMPs in another category:	
Mulching:	Applying or leaving plant residue or other material on the soil surface. Reduces wind entrainment of dust, and reduces weed competition.
Night Farming:	Operate at night when moisture levels are higher and winds tend to be lighter, thereby reducing dust emissions.

List of CMPs options continued on next page

CMP 2 FIELD AND ROW CROPS

Category **CMP 2-A; LAND PREPARATION / CULTIVATION - CONTINUED**

Non-tillage/Chemical Tillage:	Use flail mower, low volume sprayers, or heat delivery systems (as harvest pre-conditioner). Reduces or eliminates number of soil tillage passes.
Transplanting:	Planting plants already in the growth state reduces number of passes and soil disturbances compared to seeding operations.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 2 FIELD AND ROW CROPS

Category **CMP 2-B; HARVEST**

Combined Operations:	Combine equipment to perform several operations during one pass, thereby reducing the number of passes necessary to cultivate the land.
Equipment Changes/Technological Improvements:	Use larger equipment, modify land planing and land leveling, matching the equipment to row spacing to reduce the number of passes.
Hand Harvesting:	Harvest crop by hand thereby reducing soil disturbances by equipment.
Multiple CMPs in another category:	
Night Harvesting:	Implement cultural practices at night or when the humidity is high.
Pre-Harvest Soil Preparation:	Apply a light amount of water or other stabilizing material to soil prior to harvest.
Shed Packing:	Pack commodities in a covered or closed area.
Shuttle System:	Haul multiple or larger trailers/bins per trip thereby reducing the number of trips.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 2 FIELD AND ROW CROPS

Category CMP 2-C; OTHER

Cover Crops:	Use seeding or natural vegetation/regrowth of plants to cover soil surface and reduce wind erosion of soil.
Fallowing Land:	Temporary or permanent removal from production eliminates entire operation/passes or reduces soil disturbing activities.
Multiple CMPs in another category:	
Non-tillage/Chemical Tillage:	Use flail mower, low volume sprayers, or heat delivery systems (as harvest pre-conditioner). Reduces or eliminates number of soil tillage passes.
Organic Practices:	Use biological control methods or non-chemical control methods. Reduces chemical use and number of application passes.
Soil Moisture Management:	Ensure adequate soil moisture levels at the time of tillage or soil maintenance to reduce dust emissions.
Surface Roughening:	In wind-prone areas, conduct surface roughening by bedding, rough disking, or tillage that leaves the surface covered with stable clods.
Time of Disturbance/Planting:	Time planting to coincide with the time of year when PM concentrations are less.
Wind Barriers:	Plant or maintain perennial or annual plants interspersed throughout a crop field as close to perpendicular as practical to the direction of prevailing winds.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 2 FIELD AND ROW CROPS

CATEGORY **CMP 2-D; UNPAVED ROADS (GREATER THAN OR EQUAL TO 75 VEHICLE TRIPS / DAY)**

Dust Suppressant:	Apply an approved dust suppressant at a sufficient quantity and frequency to prevent windblown dust.
Paving:	Pave unpaved roads. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Road Oil:	Apply road oil to the unpaved road surface area.
Washed Gravel:	Apply washed gravel to the unpaved road surface area.
Water:	Apply water at a sufficient quantity and frequency to maintain moist surface under windy conditions.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 2 FIELD AND ROW CROPS

CATEGORY **CMP 2-E; UNPAVED ROADS (LESS THAN 75 VEHICLE TRIPS / DAY)**

Access Restriction:	Restrict public access to unpaved roads using signage or physical access restrictions (e.g., access barrier) and/or limit total trips to less than 10 per day.
Chips / Mulches:	Apply wood chips or mulch to the unpaved road surface area.
Dust Suppressant:	Apply an approved dust suppressant at a sufficient quantity and frequency to prevent windblown dust.
Less than 10 vehicle trips on any day:	
Organic Materials:	Apply organic materials to the unpaved road surface area.
Paving:	Pave unpaved roads. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Polymers:	Apply polymers to the unpaved road surface area.
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Wind Barrier:	Plant trees or establish other barriers on the typically upwind side of the traffic area to minimize windblown dust from the unpaved surface.
Other (special approval required):	Contact District (760) 872-8211 for approval

CMP 2 FIELD AND ROW CROPS

CATEGORY CMP 2-F; VEHICLE / EQUIPMENT AREAS

(IF AVERAGE DAILY VEHICLE TRIPS / YR ARE GREATER THAN OR EQUAL TO 50 ON UNPAVED EQUIPMENT YARDS, OR

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CMP 2 FIELD AND ROW CROPS

CATEGORY CMP 2-G; VEHICLE / EQUIPMENT AREAS

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Road Oil:	Apply road oil to the unpaved vehicle/equipment area surface.
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Paving:	Pave unpaved vehicle / equipment areas. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Water:	Apply water to the unpaved vehicle/equipment area surface.
Washed Gravel:	Apply washed gravel to the unpaved vehicle/equipment area surface.
Wind Barrier:	Plant trees or establish other barriers on the typically upwind side of the traffic area to minimize windblown dust from the unpaved surface.
Other (special approval required):	Contact District (760) 872-8211 for approval